SANTA CRUZ BIOTECHNOLOGY, INC.

CCS (E-1): sc-55560

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Cu-Zn superoxide dismutase-1 (SOD-1) is a well characterized cytosolic scavenger of oxygen free radicals that requires copper and zinc binding to potentiate its enzymatic activity. Copper chaperone for SOD-1 (CCS) is essential for the incorporation of copper into SOD-1, and therefore is necessary for its enzymatic activity. CCS prevents copper ions from binding to intracellular copper scavengers and provides the SOD-1 enzyme with the necessary copper cofactor. CCS escorts copper only to SOD-1 and fails to deliver copper to proteins in the mitochondria, nucleus or secretory pathway. CCS interacts with both wildtype and mutated forms of SOD-1 through CCS domains that are homologous in SOD-1. CCS exists as a homodimer that may form a heterodimer with SOD-1 during copper loading. While many tissues express CCS, the chaperone is most abundant in the kidney, liver and Purkinje cells in the neuropil of the central nervous system.

REFERENCES

1. Levanon, D., et al. 1985. Architecture and anatomy of the chromosomal locus in human chromosome 21 encoding the Cu/Zn superoxide dismutase. EMBO J. 4: 77-84.
2. Bewley, G.C. 1988. cDNA and deduced amino acid sequence of murine Cu-Zn superoxide dismutase. Nucleic Acids Res. 16: 2728.
3. Culotta, V.C., et al. 1997. The copper chaperone for superoxide dismutase. J. Biol. Chem. 272: 23469-23472.
4. Casareno, R.L., et al. 1998. The copper chaperone CSS directly interacts with copper/zinc superoxide dismutase. J. Biol. Chem. 272: 23625-23628.
5. Rae, T.D., et al. 1999. Undetectable intracellular free copper: the requirement of a copper chaperone for superoxide dismutase. Science 284: 805-808.
6. Rothstein, J.D., et al. 1999. The copper chaperone CCS is abundant in neurons and astrocytes in human and rodent brain. J. Neurochem. 72: 422-429.
7. Wong, P.C., et al. 2000. Copper chaperone for superoxide dismutase is essential to activate mammalian Cu/Zn superoxide dismutase. Proc. Natl. Acad. Sci. USA 97: 2886-2891.
8. Rae, T.D., et al. 2000. Mechanism of Cu,Zn-superoxide dismutase by the human metallochaperone CCS. J. Biol. Chem. 276: 5166-5176.
9. Lamb, A.L., et al. 2000. Heterodimer formation between superoxide dismutase and its copper chaperone. Biochemistry 39: 14730-14737.

CHROMOSOMAL LOCATION

Genetic locus: CCS (human) mapping to 11q13.2.

SOURCE

CCS (E-1) is a mouse monoclonal antibody raised against amino acids 1-274 representing full length CCS of human origin.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PRODUCT

Each vial contains 200 µg IgG_{2b} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

CCS (E-1) is recommended for detection of CCS of human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000); non cross-reactive with CCS of mouse or rat origin.

Suitable for use as control antibody for CCS siRNA (h): sc-29956, CCS shRNA Plasmid (h): sc-29956-SH and CCS shRNA (h) Lentiviral Particles: sc-29956-V.

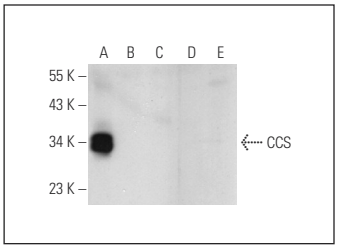
Molecular Weight of CCS: 35 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, HL-60 whole cell lysate: sc-2209 or Hep G2 cell lysate: sc-2227.

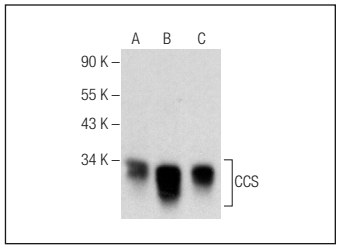
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



CCS (E-1): sc-55560. Western blot analysis of CCS expression in HeLa (**A**), C4 (**B**) and 3611-RF (**C**) whole cell lysates and mouse brain (**D**) and rat brain (**E**) tissue extracts. Note lack of reactivity with mouse and rat CCS in lanes **B**-**E**.



CCS (E-1): sc-55560. Western blot analysis of CCS expression in HL-60 (**A**), Hep G2 (**B**) and HeLa (**C**) whole cell lysates.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.